A STUDY OF FARMING SYSTEMS FOR SMALL ACREAGES IN JACKSON COUNTY, KANSAS

by

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INTRODUCTION

Many farm management studies conducted in Kansas and other states indicated that a farm of a sufficient size was needed for efficient operation, to pay operating expenses, and furnish a standard of living adequate to insure health, a reasonable amount of pleasure for the farm family and appropriate educational opportunities. These studies indicated that the appropriate size of farm was affected by several factors such as fertility of the land, location with respect to market, percentage of land in cultivation, type of farm operated, and other intangible factors such as managerial ability.

One of these studies conducted in Nemaha County, Kansas for the years 1938 and 1939 showed that practically all farms of 80 acres in size yielded insufficient returns to support a farm family in a way that would insure the health and provide for other essentials of the family (1). The standard for judging the income necessary to provide these things was taken from a study made of Farm Bureau-Farm Management home account books (2). This study indicated that a reasonable standard of living required at least $892 cash income.

Actual figures on income and expenses taken from a survey of farms in Nemaha County, and budgets on hypothetical farms in the county, showed that only in regions of very fertile land where average yields were high and where a high percentage of the land was in cultivation did the small farms (one to 120 acres) return an income adequate for a family as judged by the standard income (1).

Recent data from the United States Census indicated a substantial increase in the number of small farms. According to studies on agricultural production in the United States (3):

> The apparent stability in average acreages now appears to have arisen from conflicting trends toward more small farms and toward more large farms. Fewer middle-sized farms is a necessary accompaniment of these two.

> The 19 percent of the farmers on farms of 175 acres and over are operating two-thirds of the land; that the 4 percent of them on farms of 500 acres and over operate 40 percent of the land; and finally, that the 0.2 percent of them on farms of 5000 acres and over operate 16 percent of the land. At the opposite end of the scale, 40 percent of the farmers on farms of less than 50 acres operate less than 6 percent of the land.
>
> One may attempt to explain away this concentration in terms of land by pointing out that most of the farms of 500 acres or over are in the semi-arid region west of central Kansas. But in terms of gross value of product the concentration is still very considerable: the 9 percent of the farmers with product value of $4000 and over produced 39 percent of the value of agricultural output; and the 1.4 percent with product values of $10,000 and over turned out over 15 percent of the product. At the other end of the scale, the 28 percent with output worth less than $600 produced only 5.6 of our total agricultural output.

Thus it is found that 57.1 percent of the total gross value of products is produced by 19.3 percent of the farms. This shows that a fundamental concentration existed in terms of value of output and associated use of production resources. This is not concentration in the sense of ownership of a major part of the land by a relatively few large operators or landlords as some have conceived the problem. Nevertheless, it does represent an unequal distribution of the control of resources and is worth exploring further.

In many cases this change in size of farms does not show up in individual counties because the changes have tended to balance each other. A study of the changes within a county more than likely would show that the census indication of a relatively small change in average size of farm is a result of various influences which combine to accomplish such results. The spread of farming into the Great Plains was to counteract the breaking up of the plantations. The enlargement of farms due to mechanization is contemporaneous with the part-time movement. It is unsafe to predict that such timing will always occur in the future.

This study of the United States Census for 1935 gave a picture of the farm size and income situation and furnished a rather sound basis for a study of farm

size and pattern in typical agricultural counties in Kansas, such as Jackson County.

The problem was how best to plan for these farms in the future. If there are to be more of such farms and if a large number of them are likely to yield such small incomes that they will not support a family with an adequate standard of living, certain problems must be solved. Families which have part-time incomes from sources other than the farm may not constitute much of a problem as long as this outside source of income continues to exist. However, in times of stress and depression this part-time work often has ceased to exist and the farm was not large enough to support the family.

Generally, the farmers on these small farms had a fixed and limited amount of money, livestock, and equipment. With no source of credit with which to supplement these and without the available cash to provide fertilizer and other supplies necessary to the operation of a farm that had been run down by many years of exploitive agriculture, the family was forced to mine the soil to make a living.

Johnson and Rush (4) contended that economic research has neglected the low income farmers because of the lack of a common approach to the problem from both an economic and social standpoint. They pointed out that 41 percent of the nation's farmers (more than 2,600,000 farm families) in the group are receiving less than $750 family income including the value of home-used products and an allowance for dwelling used. Approximately 25 percent were below the $500 yearly income level. Low income often has been the result of operating land of low fertility; in other cases the land was fertile but an attempt was made to support too many people. Other factors were farms that were too small, and personal factors such as family illness, lack of opportunity to gain a foothold, or limited managerial ability resulting from environmental conditions.

Studies conducted in Kansas revealed that in many cases low income farms

were operated by older farmers who used the small farm with limited operation as a means for partial retirement. Johnson and Rush (4) pointed out that most farm management research has been conducted by determining the organization of resources on the basis of what would yield the highest net income to management in a given area and under assumed price and cost situations. This approach assumed that land, capital, and labor have alternative market values and can be used in varied proportions to achieve the highest profit combinations with management as a fixed factor. To make farms comparable all records were converted to an owner-operator basis, a uniform charge was made for capital, and family labor was charged as an expense at hired labor rates. When the analysis was completed the factors affecting profits in the assumed situation may have been determined but an abstraction had been created that probably does not fit any farm.

Tenure of the farm may greatly influence its operation because the operator who owns a farm and who furnishes most of his labor has considerably less overhead than the man who has to pay rent, interest, and other expenses not actually paid by the owner free of debt and justified in taking more risks to increase his income.

In further discussion Johnson and Rush (4) made two assumptions: (a) that it is futile to tell low income farmers that they cannot make a living where they are unless there is some better place to go, and (b) that many low income farmers must remain where they are and make the best of available land, labor, and buildings.

Some people contend that even though the income on the farm is not adequate, the fact that the family is living in a healthful environment is justification for their continuing as they are. In many cases these subsistence families may not be gaining a healthful living that will lead to the rearing

of healthful families, but they may be better off than if placed on a dole in a city. If more farm employment does not develop, it may be that these families will be forced onto small holdings, such as those in some foreign countries, which will furnish nothing more than a meager living for the family, with nothing left for interest or amortization payments. This program might be less costly than a subsidy program but it would be a distinct departure from the American way of life and thinking. Through this study an attempt was made to give information on the solution of the small farm problem.

SELECTION OF AREA TO BE STUDIED

The determination of the area to be surveyed was of particular importance. It had been decided to make a survey of farms in a typical agricultural community located around a town that depended largely upon agricultural trade for its existence. After careful consideration of the characteristics of each of several areas, it was decided that the area around Holton, Kansas, in Jackson County most nearly met all the requirements of a desirable location.

It was hoped that the chosen area could be studied in detail by contrasting each of the farmers in the Holton trade area. As time and finances were limited, and because the trade in Holton comes from an extremely large area, it was decided to restrict the farms to be studied to an area 12 miles square with Holton as the center. Even in this restricted area not all of the farmers could be visited for the purpose of obtaining schedules, and it was necessary to use a method of sampling for selecting those farms on which information should be obtained.

This study had at least two major objectives: (a) to determine the pattern of farms in an agricultural region in eastern Kansas, and (b) to make a detailed study of the small farms in the area. The second objective furnished

the material for this study.

SELECTION OF SAMPLE FARMS WITHIN THE AREA

A representative, unbiased sample was desired. This necessitated the use of an appropriate method of selecting the required number of farms. It was thought that if a stratified random sample were selected, 10 percent of the farms should be adequate for results and accurate within the required limits. However, as a matter of precaution, a larger sample was taken.

To obtain a good distribution of the sample or more uniform representation, a stratified random sample may be taken without materially biasing it. In the case of the area sampled around Holton, this method was used.

The stratified method of random sampling has value in addition to getting distribution over the universe. When stratifying by sub-areas or geographic divisions of the whole area, each area having peculiar characteristics as to topography, location, or soil types has an equal chance of being sampled.

Several suggestions were made as to the method of outlining the stratified areas to be sampled within the large area. Two methods suggested but not used were: (a) to draw concentric circles around a central point, each circle to have a larger radius until the total area to be surveyed was within the circles drawn, and (b) to use squares around a central point rather than circles. In either case the number of samples drawn from each area would be in direct proportion to its area in comparison with the other areas or on the basis of the number of farms in the area. These methods of stratification were not used, but the method illustrated in Plate I, Fig. 2 was substituted because of its simplicity.

By this method the entire area was divided into nine sub-areas of equal size. The large area contained 144 square miles or sections of land and each sub-area contained 16 square miles or sections of land. Each area was numbered

EXPLANATION OF PLATE I

Fig. 1. Jackson County, Kansas showing Holton and the distribution of the sample farms in the sampled area.

Fig. 2. The sampled area divided into sub-areas. Farm operating units are shown in sub-area 1 as they were numbered for sampling.

Fig. 3. Distribution of the farms used in the small farm study, by type of farm.

Fig. 4. Distribution by tenure of the farms used in the small farm study.

PLATE I

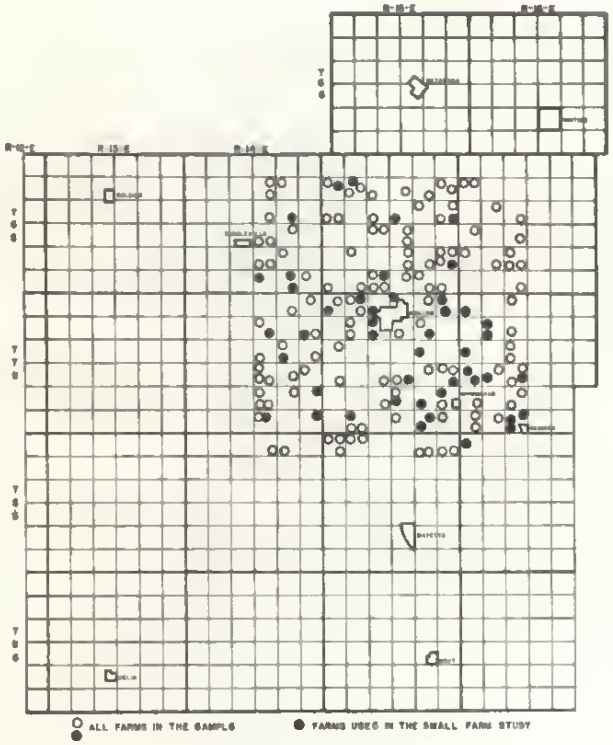

Fig. 1.

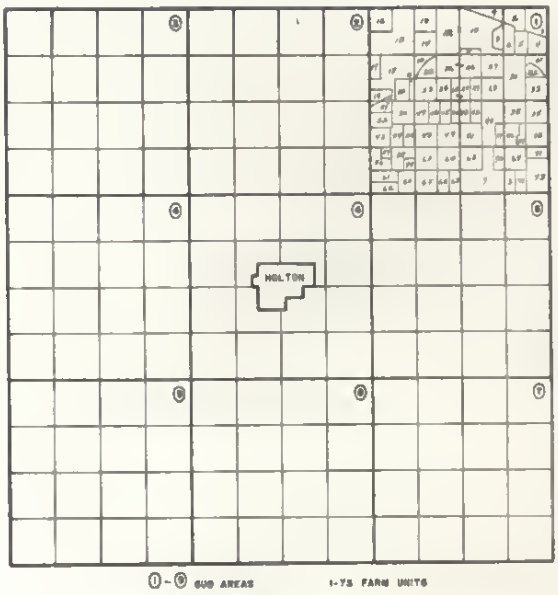

Fig. 2.

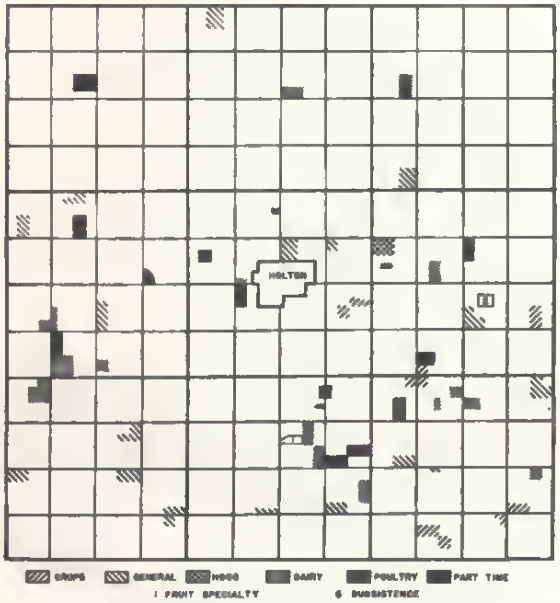

Fig. 3.

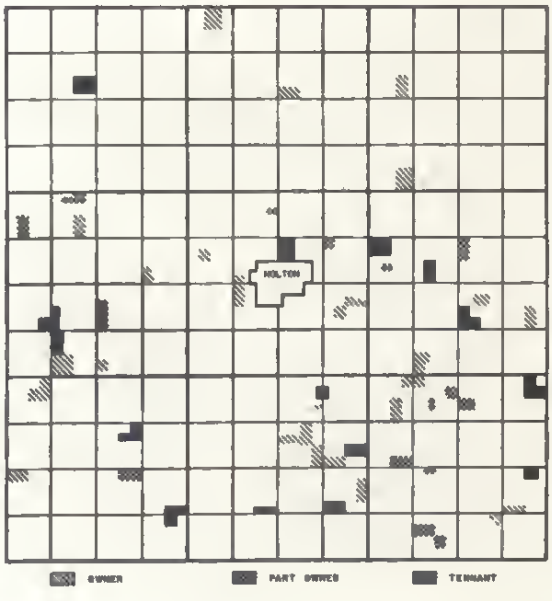

Fig. 4.

for reference. Previous to the division of the large area into sub-areas, each section of land was mapped into individually-owned tracts.[1]

The farms in each sub-area were then numbered, starting with one and numbering consecutively until each farm had received a number. Plate I, Fig. 2 shows one sub-area with all farms numbered. Each sub-area was then sampled by using Tippets random sample numbers. It was the opinion of those concerned with the sampling process in this case that if a 10 percent sample could be considered reasonably representative of the area, a 20 percent sample would be more accurate, so a 20 percent sample was drawn in each of the areas. In the best sampling procedure no substitutes would be allowed for any of the original samples drawn, but in this case it was felt that a full 20 percent sample should be taken. An effort was made to get data on all of the farms drawn in the first sample, but in cases where it could not be obtained substitute farms were drawn by the same random method used to draw the original sample. This procedure was followed until a complete 20 percent sample had been drawn in each sub-area. There were approximately 870 individually-owned tracts of land in the large area and 174 of them were drawn in the sample. Plate I, Fig. 1 shows the location of each of the sample farms.

If the 174 farms in the sample are representative of the 870 farms in the area (it is thought that they are) the small farms within the sample should be characteristic of the small farms of the area.

In the selection of the small farms for this particular study an arbitrary figure of 120 acres was set as the upper limit of acreage in the small farms.[2] As will be pointed out, area is not an accurate measure of size of the farm business, but in this case it was considered to be a rather fair method of

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[1] The Jackson County Agricultural Conservation Association records for 1940 were used as a source of data for this work.

[2] One exception, a 125-acre farm, was used.

selecting the farms. Since Holton is a rather typical agricultural town, it does not have an undue influence on size of farm comparable to the effect of a larger city. Plate I, Figs. 3 and 4 show the distribution of sample small farms by type and tenure.

As stated, each tract of land in each of the sub-areas to be sampled was mapped and numbered. As the samples were drawn these were marked on the area map which was prepared so that legal descriptions and location of sample farms could be determined.

Each of the two field workers would take one or two of the sub-area maps and contact the operator of each sample farm to obtain detailed information on its operation. Uniform schedule blanks were prepared to facilitate this work.

Certain rules were followed as closely as possible in obtaining information. One of these rules was discarding from the sample and drawing others in place of any farms on which the present operator had not operated the farm during the year for which the data were to be taken.

The data from these schedules were tabulated and organized on the basis of size of farm in acreage, type of farm, and tenure of operator.

DESCRIPTION OF AREA

Firsthand knowledge of Jackson County was supplemented by a report of specialists on particular agricultural phases (5). It is in Type-of-farming Area 4, which includes part of the Corn Belt area of the state. Agriculture is the most important industry within the county. Agricultural development and type of farming have been affected somewhat by the Indian reservation located in the southwest portion of the county.

The topography is rolling prairie and low hills, which accounts in part for the serious erosion that has taken place in many parts of the county.

The native soil was composed largely of weathered glacial material but erosion has removed much of the soil on slopes exposing unweathered stone. The subsoil is composed of yellowish brown clay on the slopes and much of the low land has a clay pan subsoil.

The upland soil grows sweet clover successfully without special practices but other soils require lime and, in many cases, phosphorus for satisfactory production of legumes. The legumes grown usually are alfalfa, sweet clover, red clover, lespedeza, and soybeans; the last two are gaining in importance.

The 1935 Census reported 2,588 farms in Jackson County with an area of 412,649 acres. Fifty-four percent of the land in farms was in cultivation and 40 percent was in permanent pasture, the remainder being in wood, waste, and farmsteads. Corn generally was grown on more than one-half of the cultivated land of the county. Other important non-legume crops grown were wheat, oats, sorghums, and prairie hay. Average yields of individual crops for the years 1911 to 1932 were corn, 21.7 bushels per acre; oats, 27.3 bushels per acre; kafir, 20.3 bushels per acre; and wheat, 15.6 bushels per acre.

Because of the nature and topography of the soil in the county, livestock must be produced so that soil-conserving crops may be grown in crop rotations. This has a tendency to force farmers to produce large quantities of feed crops which can be marksted most profitably through livestock. In recent years sheep production has become more important as a livestock enterprise. The 1930 Census showed that 48 percent of the farms were livestock farms, 26 percent were general farms, and 13 percent were cash grain farms. In 1940 the largest number of farms in Jackson County were in the group of farms ranging from 140 to 179 acres in size, while comparatively few of the farms were less than 50 acres. According to the census there was a considerable reduction from 1935 to 1940 in the number of farms of less than 50 acres (6).

The average value of farm land in Jackson County declined from $91 an acre in 1920 to $41 in 1935. Much land was over valued and over loaned during the period around 1920; this resulted in many foreclosures in recent years. A large proportion of the land in the county either is held by lending agencies or is heavily mortgaged.

The 1940 Census of Agriculture (6) showed that 47 percent of the farms of Jackson County were operated by tenants in 1940; 44.2 percent were operated by tenants in 1935; and in 1930, 40 percent of the farms of the county were operated by tenants. In 1940, 35.2 percent of all farms in Kansas were operated by full owners and 17.4 percent by part owners; a negligible number were operated by managers.

Holton, the county seat of Jackson County, is centrally located in the county. This makes it a convenient trading place for farmers to buy their supplies and sell their produce. Holton is entirely dependent upon agriculture and draws trade from an unusually wide territory. The out-lying smaller towns within Jackson County have been materially reduced in size and importance as trading centers since automobiles and better roads have made it possible for people to travel longer distances. Holton is a "Saturday town," typical of most towns in agricultural areas.

The average value of land and buildings per farm was $6,006 in 1940 compared with $10,728 in 1930. One of two things is taking place—either the value of land and buildings is decreasing or the average size of farm has decreased. The 1940 Census reported the average size of farm in Jackson County as 183.1 acres in that year compared with 159.4 acres in 1935.

From the standpoint of climate and rainfall Jackson County is favorably located. The average annual rainfall over a period of years was 35 inches. This varied from a minimum of 20 inches to a maximum of 52 inches. Often the rain has fallen in large quantities in short periods of time, causing much soil to be lost on the many slopes of the county. Approximately 70 percent of

the rainfall is during the six months of the growing season.

The average growing season in Jackson County is 176 days. This varies from 154 to 198 days. May 14 was the latest date in the spring on which killing frost was recorded. The earliest killing frost in the fall was September 29. This length of growing season is ample for maturing nearly all crops grown in Kansas.

MEASURES OF SIZE OF FARM

As stated by Forster (7), no one factor is adequate as a measure of size of farm; but as an attempt must be made to determine size of farm some factor or group of factors that best serve the purpose must be used.

In the United States, size of farm is commonly thought of in terms of physical units such as acres, sections, or a portion of a section of land. Such a measure serves very well for the purpose of selling land, measuring crop areas, and for other purposes, but in farm management a measure of the size is needed which will measure the size of farm from a business standpoint.

Examples of this measure of size of farm are shown in Table 1 by a comparison of records on dairy farms A and B. The summary shows that farm A is comparatively small in acreage but large from the standpoint of the business operations, the labor used, the total cash expenses and the net farm income. Farm B of the small farm schedules for Jackson County may be contrasted with A. This farm contains approximately the same number of acres. It also has dairying as a major enterprise; no outside labor is used, but the net income to the farm family is a minus figure. These two farms are approximately the same in area, but from a farm business standpoint A is a large farm and B is a small one.

Table 1. Comparison of actual records for 1940 of two farms located in northeast Kansas.

Organization	Farm A	Farm B	Income	Farm A	Farm B
Type of farm	Dairy	Dairy	Gross farm earnings		
Total acres in farm	78.5	76	Crops		
Permanent pasture	60.0		Dairy	$7733.83	$377.00
Crop land	10.0		Poultry		266.50
Corn		14	Credit for garden and fuel		10.00
Oats		12	Total	7733.83	653.50
Atlas		10			
Temporary pasture	10.0	19	Farm expenses		
Farmstead and waste	8.5	10	Feed purchased	1882.17	180.00
			Livestock purchased		
Livestock numbers			Crop expenses		23.60
Horses	2.0	3	Livestock expenses	7.00	3.00
Milk cows	29.0	5	Machinery expense	156.86	15.00
Heifers (replacement)	1.0	4	Interest paid, depreciation,		
Veal calves		5	insurance and repair	1414.98	273.15
Bull	1.0		Taxes		40.00
Hens		150	Hired labor	977.50	
			Auto expense	374.46	
			Total	4812.97	534.75
			Net family earnings	2920.86	118.75
			Family expenses	210.00	210.00
			Remainder	2710.86	-91.25
			Possible miscellaneous receipts		75.00
			Remainder for miscellaneous		
			expenses, debt payment and		
			savings	2710.86	-16.25

There are many other examples, such as truck crop farms, nurseries, and greenhouses, where large farm businesses flourish on small areas. However, all small farms are not so favorably located to markets for such products. Thus, the majority of small acreages are small farms in every sense of the word.

As pointed out by Black, Allen, and Negard (3), many measures of size may be employed. The following table from their article points out many problems which arise in using these factors as measures of size:

Measures of Size

Not the least of the problems involved is that of the basis of measurement of size or scale of production. The conventional basis is average acres per farm of land of all descriptions, as in the first column of Table I. But this is proved by the two columns following to be a poor measure even of the land factor in agricultural production.

TABLE I

Size of Farms of Selected States in 1935
According to Several Measures

	All land (Acres)	Improved[1] land (Acres)	Value of[2] land (Dollars)	Workers[3] (Numbers)	Productive[4] livestock animal (Units)	Average value[5] of product 1924-29 (Dollars)
New Jersey	65	42	6,010	2.5	7.6	4,160
North Carolina	66	27	2,050	1.8	2.5	1,310
Alabama	72	35	1,370	1.9	3.9	940
Ohio	90	60	4,710	1.4	9.1	1,900
Wisconsin	117	63	5,420	1.6	15.1	2,360
Iowa	155	121	14,830	1.5	21.5	3,350
California	202	77	21,940	2.4	15.4	4,610
Kansas	275	186	11,410	1.4	17.4	2,660
Wyoming	1,610	196	10,900	1.9	63.9	3,500
United States	155	75	5,550	1.7	10.3	2,370

[1]Crop land plus plowable pasture.
[2]Data of 1930, since value of land and farm buildings is not given separately in 1935.
[3]Persons gainfully employed in agriculture per farm in 1930. No census of occupations was taken in 1935.
[4]A productive animal unit equals one cow, or 2 heifers or calves, or 5 hogs, or 10 shoats, or 7 sheep, or 14 lambs, or 100 chickens.

[5]Value of home-produced feed and seed counted only in the final product.

> If labor input is substituted for land input, the difference in size largely disappears, with only the two great fruit and vegetable states, New Jersey and California, standing out from the rest. The range in livestock inputs is very wide. If adequate data were available, a unit could be devised combining all the input factors in common terms, which would make the one best measure of size... This measure would require taking account of the value of the annual use of all the input factors, including management, and give a measure comparable with value added by manufactures in industry. Input factors with quick turnover, like feed, would be included only for the period while in use... The problem of measure is equally important in dealing with changes in size of farms. Probably the physical volume of production and gross income measures are the most nearly adequate for this purpose.

In the Jackson County study of small farms more must be done than measure size to determine the extent to which these farms with small businesses can survive and provide adequately for the farm family dependent on the farm for a living. As the farms in the Jackson County study are not affected by special markets or by favorable location, they will be considered as general with no further consideration to the specialty farms.

Many measures of the return from the farm business have been devised and used for different approaches to the study of the farm business. Forster (7) described some measures which are incorporated in the following topics.

Farm Income. Farm income is a complete measure of the farm business and is determined by adding the gross income and the increase in inventories, and then subtracting the cash expenses, the decrease in inventories, the depreciation on the capital goods employed, and the estimated value of the unpaid family labor. This measure of the farm business is not satisfactory for use in this study because the object of the study is to ascertain how much money can be made available for these families on small farms and to determine how this money can be made to yield the highest possible standard of living. As home-used products must of necessity be a large item for families on small farms, their value should enter into the measure of the business.

Labor Income. Labor income is farm income less interest on total investment. Many times the family on the small farm may use for other purposes money that does not have to be paid for interest. True enough, the investment in this home might be put out at interest if it were not invested in the farm, but this family has chosen to invest in a home, and if interest was not actually paid, it was not considered as an expense in this study.

Net Farm Income. Net farm income is a measure computed by adding gross receipts and increase in inventory, then subtracting the gross expenses and an estimate of the operator's labor. The home-used products do not enter into the measure of the business and the operator's labor is considered as marketable, either on this farm or some other place.

Farm Family Earnings. Farm family earnings are gross cash receipts plus inventory increases and value of the farm products used in the home, less cash expenses, the decrease in inventory, and depreciation.

This measure of success most nearly meets the needs for the study of small farms because the value of home-used products was included in the return to the family and only interest actually paid or to be paid each year was charged as expense. In calculating net family earnings for this study, interest on actual indebtedness was charged as an expense but no interest was charged on total capital used.

ANALYSIS OF DATA

Determination of Farm Type

A common method of determining type of farm was used in this study. Farms were typed according to the contribution each enterprise in the farm business made toward the gross income of the farm. If the receipts from any

one enterprise on the farm contributed 40 percent or more of the gross income, that enterprise designated the type for the farm. For example, if a farm had a major enterprise in dairying and the income from that dairy enterprise was at least 40 percent of the gross family earnings of the farm, that farm was designated a dairy farm. If no enterprise on the farm contributed an income equal to as much as 40 percent of the gross earnings, the farm was classified as a general farm. If two major enterprises on the farm each contributed 40 percent or more toward the gross earnings, the enterprise contributing the higher percent of the gross earnings was used to type the farm. In this survey there were a number of farms on which the operator or some other member of the farm family had an income from labor or investments other than farming. If this outside income amounted to 40 percent or more of the gross earnings to the family, the farm was called a part-time farm. A subsistence farm was defined as one on which the value of farm-furnished products for home use amounted to at least 50 percent of the gross family earnings.

Tables 2 and 3 give data relative to types of farms. It is felt that type determination in the case of small farms often is rather misleading. This occurs in this study. For example, a large number of the farms of 80 acres or less were typed as dairy farms. In many cases they did not have a large enough dairy enterprise to warrant being classed as dairy farms. Many of the operators were old, farmed on a limited scale, and their gross incomes were small. Each of these operators milked a few cows and the income from these cows furnished the required percentage of the total income for a dairy farm, according to the definition used, although the volume of dairy products was small.

Another case of questionable classification is Farm No. 106, designated as a subsistence farm. The operator put all of his eggs in one basket by planting most of the cultivated land in corn and raised a number of hogs to

Table 2. Percentage of gross farm earnings and total farm expenses from various sources of income and expenses on 24 farms of one to 80 acres in Jackson County, Kansas in 1940, by type of farm.

Source of receipts	Number and type of farms						
	7 Part-time	4 General	9 Dairy	1 Crops	1 Poultry	1 Fruit	1 Subsistence[2]
Dairy	8.3	16.4	51.8	27.8	42.1		69.2
Other cattle	.7						
Hogs	6.4	25.1	4.6	7.8	2.0		14.3
Poultry	7.5	16.4	22.6	12.2	52.2	4.9	14.9
Horses	.2	.2	-1.0				
Sheep	1.8						
All livestock	24.9	58.1	78.0	47.8	96.3	4.9	98.4
Crops	3.3	10.8	4.4	41.1		50.2[1]	
Garden and fuel	2.3	9.4	5.6	6.7	3.7	7.6	1.6
Miscellaneous	69.5	21.7	12.0	4.4		37.3	
Total percentage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Expenses							
Crops	4.0		1.4	.5		8.4	
Livestock	2.0	4.6	2.4	1.4	3.5	.8	1.0
Machinery	12.6	6.4	8.8	8.2		3.4	
Feed purchased	11.5	8.7	19.7	10.8	65.9	4.2	32.5
Fixed expense	39.6	61.3	52.7	62.8	21.4	34.0	66.5
Auto	15.4	19.0	14.3	16.3	9.2	15.6	
Labor hired	14.9		.7			33.6	
Total percentage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Family expense, percentage of total expenses	27.2	63.2	40.8	25.4	14.4	52.4	58.4

[1]Orchard receipts listed under crops.

[2]Fifty percent of receipts were from products used in the home.

Table 3. Percentage of gross farm earnings and total farm expenses from various sources of income and expenses on 22 farms of 81 to 120 acres in Jackson County, Kansas in 1940, by type of farm.

Source of receipts	Number and type of farms					
	3 Part-time	10 General	2 Dairy	4 Crops	2 Poultry	1 Hog
Dairy	9.2	26.2	41.8	19.0	27.8	30.0
Other cattle	13.0	.5				
Hogs	13.2	21.2	6.8	.8	11.4	50.0
Poultry	3.6	18.9	13.0	11.0	48.5	14.0
Horses	- .8	.5	.5			
Sheep		7.7				
All livestock	38.2	75.0	62.1	30.9	87.7	94.0
Crops		9.3		61.0	2.2	4.2
Garden and fuel	5.9	6.6	8.1	2.2	4.6	1.8
Miscellaneous	55.9	9.1	29.8	6.0	5.5	
Total percentage	100.0	100.0	100.0	100.0	100.0	100.0
Expenses						
Crops	9.6	1.5		6.2	1.1	
Livestock	4.4	3.0	1.9	1.6	.8	5.8
Machinery	4.7	13.0	2.6	21.7	15.5	11.5
Feed purchased	22.8	25.8	1.3	5.4	15.0	9.6
Fixed expense	31.3	45.0	83.0	47.0	50.2	46.2
Auto	5.2	10.2	11.2	12.3	16.0	15.4
Labor hired	22.0	1.5		5.8	1.4	11.5
Total percentage	100.0	100.0	100.0	100.0	100.0	100.0
Family expense, percentage of expenses	43.2	32.4	58.6	28.1	43.5	41.7

consume the anticipated corn crop. The particular year for which these schedules were taken was a poor year for growing corn because of bad weather conditions and chinch bugs. The hogs suffered from lack of feed and disease; the income for that particular year was so low that the value of products produced on the farm and used in the home amounted to 50 percent or more of the gross income from the farm. Under more favorable circumstances this farm might be classed as a hog farm or a cash-grain farm if the corn produced were sold.

The system of determining type of farm makes little difference. There will be some errors. But it seems that in the case of small farm units these errors are likely to be more numerous because the gross income is small in comparison to that of larger farms and in many cases type-of-farming designations may be based on enterprises of very small size because of the lack of size of the entire farm program.

Even though typing of farms in the small size group probably is in error more than in the case of larger units, it seemed advisable to use a type of farming and a tenure basis for organizing the data for presentation in this study.

Procedure for Determining Financial Return on the Sample Farms

In considering the financial returns to the families operating the small farms included in this study, the fact was kept in mind that data used in this study were for a one-year period and that in making conclusions such data did not always represent average conditions. The year for which these data were taken, 1940, was a poor crop year in Jackson County; consequently, returns from both crops and livestock suffered somewhat. Oats yields reported for 1940 compared favorably with long-time average yields for the county, but yields of other major crops were considerably below average. Corn suffered

materially from adverse weather conditions and chinch bugs. Crop yields are discussed further in the budget phase of this study.

Low financial returns on many of these farms and the contributing factors of low crop yields and low efficiency of operation resulted partly from inadequate management. No method of measuring managerial ability was attempted in this study, but observations of the fieldmen were recorded. In many cases these observations were augmented or confirmed by people in the community. From these observations it was concluded that not much could be done to better the conditions of the families or to improve the financial return from many of the farms as long as the present management was responsible for the operations of the farm.

The small farms surveyed were considered in two size groups--those between one and 80 acres, and those between 81 and 120 acres (the latter group contains one farm of 125 acres).

The method used in determining net family earnings included the calculation of net receipts from each source of income. Dairying as a source of income may be used as an illustration. To find the net receipts from dairying, the total of beginning inventory and purchases was subtracted from the total of closing inventory, sales of dairy products, and the value of dairy products used in the home. Inventory values of grain and feed were so small in many cases that changes in inventory could not be used. In most cases sales of crops were used as receipts. Values of fuel and garden produce and the value of miscellaneous receipts were added into the total of net receipts. This item included receipts such as labor off the farm, Agricultural Conservation Program payments, income from investments other than the farm operated, pensions, and relief grants. No credit was allowed for housing furnished the family by the farm.

Items of expense charged against farm operations to obtain the family earnings included the items listed as expense in Tables 2 and 3. Explanation

of some of these items should be given. The machinery expense included the cost of custom work hired. Fixed expenses included such items as taxes, depreciation on buildings, interest actually reported as paid, and repairs on buildings. No interest was charged on investment. One year's taxes were charged as expense whether they had been paid or not. Charges for labor were for labor hired and paid. No charge was made nor credit given for unpaid family labor.

The item listed as household expenses is somewhat more inclusive than the term would indicate; probably a better term would be living expenses or family expenses. This item included food, clothing, medical care, education, recreation, and household furnishings but does not include such expenditures as gifts or money spent for life insurance.

The ordinary farmer operating on 80 acres or less in Jackson County needed an income in addition to the income from his farm to make a living for a family with a reasonably satisfactory standard of living (Tables 4 and 5).

The part-time group, which contained seven farms, had average gross family earnings of $1,882, net family earnings of $1,084, and $785 remaining after family expenses were subtracted. These seven families should be able to maintain a reasonably good standard of living and to make some savings.

With the exception of the fruit-specialty farms, the remaining farms in the one to 80 acre size range did not return enough income to support a family with a reasonable standard of living. The one fruit farm returned nearly as large net farm earnings as did the average of the part-time group, but the family expenses on the fruit farm were so much more that the amount left after subtracting these expenses was reduced to about one-half that of the part-time group.

The data for the crops, poultry, and subsistence farms are for only one farm in each case and, therefore, are not comparable with data for other groups

Table 4. Average receipts and expenses from various sources on 24 farms, of one to 80 acres, in Jackson County, Kansas, in 1940, by type of farm.

Source of receipts	Number and type of farms						
	7 Part-time	4 General	9 Dairy	1 Crops	1 Poultry	1 Fruit	1 Subsistence
Dairy	$155	$80	$257	$125	$573		$218
Cattle	14						
Hogs	120	123	23	35	27		45
Poultry	141	80	112	55	710	$80	47
Horses	4	1	- 5				
Sheep	35						
All livestock	469	284	387	215	1310	80	310
Crops	62	53	22	185		825	
Garden and fuel	44	46	28	30	50	125	5
Miscellaneous	1307	106	59	20		613	
Total family earnings	1882	489	496	450	1360	1643	315
Expenses							
Crop	32		4	2		50	
Livestock	15	8	7	5	48	5	2
Machinery	101	11	26	30		19	
Feed purchased	92	15	58	40	900	25	75
Fixed expenses	316	106	155	231	292	203	154
Auto expenses	123	33	42	60	125	93	
Labor hired	119		2			200	
Total farm expenses	798	173	294	368	1365	595	231
Net family earnings	1084	316	202	82	- 5	1048	84
Family expense	299	297	203	125	230	654	325
Amount left for miscellaneous expenses and earnings	785	19	- 1	-43	-235	394	-241

Table 5. Average receipts and expenses from various sources on 22 farms, of 81 to 120 acres, in Jackson County, Kansas in 1940, by type of farm.

Source of receipts	Number and type of farms					
	3 Part-time	10 General	2 Dairy	4 Crops	2 Poultry	1 Hog
Dairy	$82	$293	$437	$202	$229	$340
Other cattle	116	6				
Hogs	118	237	71	9	94	568
Poultry	32	212	136	118	399	158
Horses	- 7	6	5			
Sheep		86				
Total livestock	341	840	649	329	722	1066
Crops		103		651	18	48
Garden and fuel	53	74	85	24	38	20
Miscellaneous	500	102	312	61	45	
Total family earnings	894	1119	1046	1065	823	1134
Expenses						
Crop	35	8		39	4	
Livestock	16	15	6	10	3	15
Machinery	17	67	8	135	56	30
Feed purchased	83	134	4	34	54	25
Fixed expense	114	234	259	293	181	120
Auto expense	19	53	35	77	58	40
Labor hired	80	8		36	5	30
Total farm expenses	364	519	312	624	361	260
Net family earnings	530	600	734	441	462	874
Family expense	277	249	442	244	278	186
Amount left for miscellaneous expenses and savings	253	351	292	197	184	688

except the fruit specialty farms. The poultry farm was small, containing only 22 acres, five acres of which were in cultivation. The return from this farm was large, $1,360 gross earnings, but so much was spent for feed that could not be raised on the limited acreage that a net loss for the year resulted. The subsistence and dairy farms were discussed at some length under the development of type of farming. It should be remembered that even though the nine farms in the dairy group received 40 percent or more of their income from dairying, the dairy enterprises were small.

The general farm group contained four farms. They usually had several sources of income but no major enterprise. Also, there was a tendency toward emphasis on crops and small-scale operation.

The old saying that it takes money to make money apparently is true in the case of the operators of these small farms. Those farms having the largest net earnings for the family also had the largest total farm expense, so profits were not realized because of decreases in costs of operation but principally through outside income or, in the case of the fruit specialty farm, by conducting a large business on a small acreage. It is interesting to know that the operator of the fruit farm operated a fruit and vegetable market during the winter months; this gave him a chance to market his own product to a better advantage, and he could market his labor during the part of the year when farm labor was slack. Tables 2 and 3 give a better picture of variations in expenses. A discussion of these tables is included on succeeding pages.

The addition of a small number of acres to the operating unit apparently had a considerable influence on the type and income of farms. The part-time farm was less frequent in the larger size group. Of the total of 22 farms from 81 to 120 acres in size, only three were typed as part-time. One of those was not so typically part-time as others in the group. The average gross family earnings of this group were $894, considerably less than the corresponding

average earnings for the part-time operators on the farms in the one to 80 acre group. With the additional acreage added to the operating unit, the operator's time was more nearly occupied with farming and he had less time for other activities.

An increasing tendency toward diversification with size was shown by the existence of nearly 50 percent general farms in the 81 to 120 acre size group. Of the remaining farms in this group, two were typed as dairy, two as poultry, four as crops, and one as a hog farm.

From a net farm earnings standpoint, the dairy, poultry, and crops farms were low in comparison with other types of farms. The hog farm was highest in net returns but there was only one farm in this group. The operator was comparatively young and the farm was on bottom land where corn was produced regardless of weather conditions. Judging from returns received by the operators of the crops farms, it did not pay to emphasize crops to sell as such on small acreages.

The distribution of receipts and expenses according to their sources on these same farms, grouped according to tenure, indicates that, from the standpoint of satisfactory net earnings of the farm family, the type of small farm operated was more important than the tenure of the operators. This statement is based on the fact that there was less variation between the net earnings of these farm families when grouped by tenure than there was when they were grouped according to type.

The owner group in the size range between one to 80 acres is influenced by the part-time operators whose incomes were much higher than the incomes of families on other types of farms in this size range. In this group all of the part-time operators except one were owners. The diversity of income on owned farms should be noticed. Apparently, if families were certain that they were permanently located, they were willing and able to diversify and engage in more

permanent types of farming with the enterprises more permanently established.

The part-owner group in the one to 80 acre size range was not truly representative of the part-owner portion of the universe or else the part-owner on acreages as small or smaller than 80 acres were of the poorer class of farmers. There were five farms in this group, the operators of two of these farms were much below average in managerial ability and a third was 83 years old and living on a very small acreage where he must buy large quantities of feed to carry on his poultry and dairy enterprises. This part-owner group was the only one of the groups which shows a loss for net family earnings.

A comparison of fixed expenses for tenure groups showed that the owner and part-owner paid considerably larger fixed expense items because of taxes and depreciation on property which the landlord paid on the tenant farms and of course is not accounted for in this study. This, however, probably was off-set by the payment of rent by the tenant to the landowner.

The machinery expense and the labor hired item for the tenant group in the one to 80 acre group were unduly high on account of one part-time farm. This operator owned considerable machinery that was used for custom work in the community. The overhead expense of operating this equipment and the labor involved made these items relatively high. Machinery expense would be $39 and labor hired $85 if these items for this one farm were removed from the average for the group. This would increase the net farm earnings for this group to $1180. Tenant expenses generally were lower for each item of expense than were the expenses of owners and part-owners, probably because tenants' earnings were smaller, making less money available to spend. The part-time farm mentioned above had an unusual influence on the gross earnings for tenants in the one to 80 acre group as is evidenced by the high return from miscellaneous sources shown by the average for tenants.

The percentage figures for the receipt and expense data on these farms

Table 6. Average receipts and expenses from various sources on 46 small farms in Jackson County, Kansas, in 1940, by tenure of operator.

Source of receipts	ons to 80 acre group			81 to 120 acre group		
	Number and tenure of farms			Number and tenure of farms		
	14 Owners	5 Tenants	5 Part-owners	9 Owners	8 Tenants	5 Part-owners
Dairy	$165	$225	$238	$268	$190	$346
Other cattle	7			39	8	
Hogs	83	35	62	88	212	234
Poultry	107	101	241	176	89	325
Horses	1	- 4	1	7	- 3	
Sheep	17			56		46
Total livestock	380	357	542	634	496	951
Crops	121		24	287	50	146
Garden and fuel	46	15	46	42	62	76
Miscellaneous	583	448	67	258	76	108
Total family earnings	1130	820	679	1221	684	1281
Expenses						
Crop	21	2		30	3	10
Livestock	10	10	14	14	9	15
Machinery	29	112	16	80	40	75
Feed purchased	58	48	243	88	35	158
Fixed expenses	274	81	130	302	94	278
Auto expenses	70	72	60	56	37	65
Labor hired	53	63		43	4	31
Total farm expense	515	388	463	613	222	632
Net family earnings	615	432	216	608	462	649
Family expense	279	224	222	349	167	289
Amount left for miscellaneous expenses and savings	336	208	- 6	259	295	360

Table 7. Percentage of gross farm earnings and total farm expenses from various sources of income and expenses, on 46 small farms in Jackson County, Kansas, in 1940, by tenure of operator.

Source of receipts	one to 80 acre group			81 to 120 acre group		
	Number and tenure of farms			Number and tenure of farms		
	14 Owners	5 Tenants	5 Part-owners	9 Owners	8 Tenants	5 Part-owners
Dairy	$14.6	$27.4	$35.0	$21.9	$27.8	$27.0
Other cattle	.6			3.2	1.2	
Hogs	7.3	4.3	9.1	7.2	31.0	18.3
Poultry	9.5	12.3	35.6	14.4	13.0	25.4
Horses	.1	- .5	.1	.6	- .4	
Sheep	1.5			4.6		3.6
All livestock	33.6	43.5	79.8	51.9	72.6	74.3
Crops	10.7		3.5	23.5	7.3	11.4
Garden and fuel	4.0	1.8	6.8	3.4	9.0	5.9
Miscellaneous	51.7	54.7	9.9	21.2	11.1	8.4
Total percentage	100.0	100.0	100.0	100.0	100.0	100.0
Expenses						
Crops	4.0	.5		4.9	1.4	1.6
Livestock	2.0	2.6	3.0	2.3	4.0	2.4
Machinery	5.6	28.9	3.4	13.0	18.0	12.0
Feed purchased	11.3	12.4	52.6	14.4	15.8	25.0
Fixed expense	53.2	20.8	28.0	49.3	42.3	44.0
Auto expense	13.6	18.6	13.0	9.1	16.7	10.0
Labor hired	10.3	16.2		7.0	1.8	5.0
Total percentage	100.0	100.0	100.0	100.0	100.0	100.0
Family expense, percentage of expenses	35.1	36.6	32.4	36.3	43.7	31.4

substantiate the type designation. Tables 2 and 3 show that a high percentage of the receipts for part-time farms were from miscellaneous sources; on dairy and poultry farms the large percentage of receipts were from these sources. Attention should be called to the one farm listed as a subsistence farm. A large percent of receipts were from livestock, but livestock products used in the home were included as receipts from livestock. The gross farm earnings figure in this case was low and 50 percent or more of that gross amount was credit for home-used products.

As shown, the total expenses on various types of farms varied greatly. In a similar manner, the family expenses varied on the basis of percent of total expenses. But with one or two exceptions the dollar value of family expenses did not vary materially (Tables 4 and 5). When the farms are grouped on a tenure basis, the family expense as a percentage of the total is uniform for all groups (Table 7).

SOME FACTORS THAT AFFECT THE ORGANIZATION AND EFFICIENCY OF OPERATION OF THE SAMPLE FARMS

Return Per Productive Livestock Unit

Factors bearing on organization and efficiency (Tables 8 and 9) probably were significant and often had an influence on the ultimate return from a farm business but there were a number of exceptions in this study. In other words, net farm earnings did not vary in direct proportion to the average return per unit of productive livestock nor did they vary in direct proportion to the percentage of land in cultivation. However, net returns to the farm tended to increase as the average income per unit of productive livestock increased.

An adequate return for a livestock unit is relative in nature, depending

Table 8. Summary of the organization and operation of 24 farms one to 80 acres in size in Jackson County, Kansas, in 1940.

Factor	Number and tenure of farms			Number and type of farms						
	14 Owners	5 Tenants	5 Part-owners	7 Part-time	4 General	1 Crops	9 Dairy	1 Poultry	1 Fruit	1 Subsist-ence
	Acres									
Average total acres	65.0	73.8	55.6	68.8	75.0	80.0	63.4	22.0	45.0	60.0
Average crop acres	46.6	38.1	37.0	46.85	55.3	51.0	39.4	5.0	33.0	45.0
	Use of acreage on percentage basis									
Crop acres, percent of total acres	71.7	51.6	66.5	68.3	74.1	63.7	60.7	23.0	73.0	75.0
Row crops, percent of crop acres	32.8	51.7	54.5	25.1	53.4	23.5	46.8	100.0		71.1
Percent in wheat	21.4	5.24	12.4	23.5	19.0	31.37	8.9			11.11
Legumes, percent of crop acres	14.3	15.7	7.6	18.5	6.5	9.8	10.4		9.0	6.6
Percent of farm family earnings from livestock	33.6	43.5	79.8	24.9	58.0	47.0	78.0	96.3	4.8	98.4
	Income per productive livestock unit									
Receipt per cow	$69.88	$52.60	$56.42	$68.47	$19.42	$62.50	$65.72	$114.00		$43.60
Receipt per hen	1.41	1.81	2.00	2.18	1.12	0.53	1.58	3.15	$1.12	.90
Receipt per sow	60.56	62.41	60.71	92.48	38.30	70.00	62.00			18.00
	Average net family earnings									
Gross family earnings	$1130.00	$820.00	$679.00	$1882.00	$489.00	$450.00	$496.00	$1360.00	$1643.00	$315.00
Total expenses	515.00	388.00	463.00	798.00	173.00	368.00	294.00	1365.00	595.00	231.00
Net family earnings	615.00	432.00	216.00	1084.00	316.00	82.00	202.00	- 5.00	1048.00	84.00

Table 9. Summary of the organization and operation of 22 farms 81 to 120 acres in size in Jackson County, Kansas, in 1940.

Factor	Number and tenure of farms				Number and type of farms				
	9 Owners	8 Tenants	5 Part-owners	3 Part-time	10 General	4 Crops	2 Dairy	2 Poultry	1 Hog
	Acres								
Average total acres	109.0	111.0	107.0	104.6	108.9	114.0	105.0	108.0	120.0
Average crop acres	62.0	79.0	77.7	63.3	78.9	79.0	37.0	66.0	70.0
	Use of acreage on percentage basis								
Crop acres, percent of total	56.8	71.2	72.6	60.0	72.4	69.2	34.9	61.4	58.3
Row crops, percent of crops	39.1	49.2	42.2	46.6	42.6	37.9	62.2	41.6	54.3
Percent in wheat	22.2	12.27	17.5	14.2	16.1	31.6	8.1	11.4	15.7
Legumes, percent of crops	21.6	15.4	15.5	22.2	19.7	10.1	22.9	15.9	
Percent of farm family earnings from livestock (percent of total earnings)	54.2	72.5	74.2	38.1	75.0	34.8	62.0	87.7	94.0
	Income per productive livestock unit								
Receipt per cow	$93.91	$60.50	$69.82	$91.00	$68.00	$86.36	$79.40	$87.58	$68.00
Receipt per hen	1.54	2.19	3.10	2.54	2.29	1.34	1.72	3.48	1.53
Receipt per sow	76.00	121.00	87.83	77.50	107.29	7.00	142.00	48.00	142.00
	Average net family earnings								
Gross family earnings	$1168	$684	$1281	$894	$1119	$1065	$1046	$823	$1134
Total expense	613	222	632	364	519	624	312	316	260
Net family earnings	608	462	649	530	600	441	734	462	874

upon the conditions of the individual farm. For example, Farm No. 91 had comparatively high returns per head from both dairy cows and chickens, yet the net return for the farm was a minus figure. The operator's farm program was intensive but on a small scale; his farm was so small that he had to buy large quantities of feed. Even though the return per productive animal was relatively high it was not high enough to overcome other limiting conditions.

A farm comparable to No. 91 was mentioned previously and was shown in Table 1, Column A. On this farm production was intensive but on a larger scale. Large amounts were spent for feed and labor, but more efficient production and a specialized market enabled this farmer to realize a much larger return per productive animal and the farm returned a satisfactory income.

In general, the farms in the types of farming which averaged lowest in income (dairy, crops, poultry) also averaged comparatively low in return from productive livestock units. Another influence in this connection was the small business carried on on some of these farms. A farm with only a few productive livestock units undoubtedly would have a rather low net return even though that livestock should produce efficiently, provided of course, that a large percentage of the gross income to the farm was from livestock. This was the case with many of these farms. The average return per livestock unit tended to increase as the size of farm increased from the one to 80 acre group to the 81 to 120 acre group. This is contrary to the general trend as shown by other farm efficiency studies (8) which indicated that, as size of farm increases, return per livestock unit decreases. Farms of 120 acres probably are too small to respond in the usual manner to an increase in size of farm.

Age of Farm Operators

Reference was made to the age of operators on small farms. Table 10 shows

the average age of operators by tenure and types for the two size groups of farms combined. There apparently is some correlation between income on these farms and the age of operator. As stated, the average family earnings for the farms typed as dairy, crops, and poultry farms were low in comparison with other types of farms. Table 10 shows that the average age of operator on these types of farms returning low earnings is high in comparison with other types. It can not definitely be said whether the age of the operator or the type of farming accounts for this low income or whether low income farmers more often operate farms which will classify into one of these three types. A frequency distribution of farms on the basis of net family earnings and age of operator showed a trend toward higher incomes for the younger operators. If the part-time farmers were removed from this distribution the trend probably would be more pronounced.

The average ages of the operators on the basis of tenure shows that there was not much difference between the ages of owners and part-owners but that the tenants averaged nearly ten years younger than the other two groups. It seems that the tenant either was forced to acquire a larger unit to continue operations or else he acquired some equity in a farm and in that way he was in one of the other two classes. Many of these tenants probably will acquire larger units if they continue farming. It also should be remembered that the percentage of tenancy is relatively low on these small farms as compared with farms in the county as a whole.

Table 10 also shows the average number in the families of the operators of these small farms. The average number for all families was 2.6; this means that there is an average of less than one child per family at home. This is not surprising when one considers the age of the operators of the farms and the lack in size of operating units. The tenant operators on these farms averaged one child at home. Part-owners had an average of slightly less than one child at

Table 10. Number and percentage of farms, average age of operators and average number in the families for 46 farms one to 120 acres in size, by tenure and type of farms.

Type and tenure of farm	Number of farms in group	Percent of total number	Average age of operators	Average number in family
Part-time	10	21.7	46.4	2.5
General	14	30.4	53.2	3.3
Crops	5	10.8	57.0	1.7
Dairy	11	24.0	57.0	2.3
Poultry	3	6.5	65.0	3.0
Hog	1	2.2	39.0	2.0
Fruit	1	2.2	47.0	4.0
Subsistence	1	2.2	56.0	2.0
Weighted average			53.4	2.6
Owners	23	50.0	55.0	2.5
Tenants	13	28.3	47.0	3.0
Part-owners	10	21.7	57.0	2.9
Weighted average			53.1	2.7

home, but the owners averaged one child at home to two families. It should be remembered that this average size of family was for the family at home. Records show that the numbers in the original families were much larger than the average shown. Statements made as to the average number of children at home assumed that there were two parents at home in each family. This was true except in a negligible number of cases.

Average Number of Livestock Kept by Various Groups of Operators

Much has been said about the lack of size of farming operations on many of these small farms. Table 11 shows the average number of livestock kept on the various groups of farms. In general, the farms in the group from 81 to 120 acres showed more diversity of livestock enterprises and larger average numbers of livestock. As might be expected, milk cows, pigs, and chickens were the most common types of livestock on these farms, and in no case were there any beef cows kept.

The average number of milk cows was six on the dairy farms of the 81 to 120 acre group. This number certainly would have to be considered the minimum that could be kept profitably on a breeding program basis requiring a herd sire. The formation of cooperative breeding associations of one type or another might be used to solve this problem for the small operator.

Table 12 shows the number of livestock on the basis of tenure of operator. Owners and part-owners tended to emphasize livestock production more than did tenants. Tenant farmers on the small farms tended to emphasize dairy and poultry stock, while the owners and part-owners seemingly diversified to a greater extent.

Table 11. Average numbers of livestock on 46 farms in Jackson County, Kansas in 1940 by type of farm.

Kind of livestock	Type							
	Part-time	General	Dairy	Crops	Poultry	Fruit	Subsistence	Hog
	one to 80 acre group							
Work stock	1.5	3.5	2.3			2.0	2.0	
Dairy cows	2.4	2.7	4.7	2.0	5.0		5.0	
Replacement dairy heifers	1.5	1.0	0.9	1.0				
Beef cows								
Other beef cattle								
Ewes	7.3							
Rams								
Sows	1.3	2.2	0.2				2.0	
Stock pigs	16.5	29.7	4.7	7.0	109.0		16.0	
Boar								
Hens	56.4	94.7	81.4	100.0	300.0	100.0	60.0	
	81 to 120 acre group							
Work stock	3.0	3.8	2.0	3.0	3.0			4.0
Dairy cows	2.0	4.6	6.0	2.5	2.5			5.0
Replacement dairy heifers		2.1	5.5	1.5	1.0			
Beef cows								
Other beef cattle		0.6	0.5					
Ewes		6.5						
Rams				0.25				
Sows	1.3	2.3	0.5	1.7				4.0
Stock pigs	9.3	24.3	13.0	1.2	8.5			83.0
Boar								
Hens	43.0	122.8	80.0	107.0	192.5			150.0

Table 12. Average numbers of livestock on 46 farms in Jackson County, Kansas in 1940, by tenure.

Kind of livestock	one to 80 acre group			81 to 120 acre group		
	Owner	Tenant	Part-owner	Owner	Tenant	Part-owner
Work stock	2.0	2.6	2.2	2.2	4.0	4.4
Dairy cows	3.0	4.4	4.0	3.2	3.3	5.0
Replacement dairy heifers	1.3	0.6	0.6	2.0	1.3	2.4
Other beef cattle	0.3	0.2				
Ewes	3.6			5.2	1.1	1.8
Rams						
Sows	1.0	0.6	0.8	1.0	2.0	1.8
Stock pigs	13.5	6.8	37.4	11.0	25.3	21.4
Boar						
Hens	73.4	62.8	145.0	121.0	72.6	164.0

BUDGET PHASE OF THE STUDY

The budget phase of this study is an attempt to reorganize the average 80 and 120 acre farms studied in Jackson County in such a manner that they would return satisfactory incomes to the families operating acreages of that size. "Farm budgeting may be defined as an analytical technique for comparing net returns from several alternative organizations of an individual farm"(9).

The budgeting procedure is used for many purposes in farm management studies. Even though hypothetical farm organizations based on average or assumed yields and prices and input and output factors are used, the budget can be of great assistance in comparing various combinations of enterprises on the farm.

The farm budget has defects which may be minimized by careful preparation of standards used. Even with the greatest of care such influences as soil productivity, distance from marketing facilities, efficiency of management, and others are difficult to measure under circumstances attending the preparation of most farm budgets. The most serious of these is the lack of any satisfactory measure of management. In other words, age, physical and mental ability, home conditions, financial obligations, or attitude toward the work may be the difference between success and failure of the operator on a particular farm even when conditions of climate, soils, and marketing facilities are equal to those of farms making good returns. In the budgeting procedure allowances may be made for varying conditions in soil productivity if detailed information is available in regard to soil types and their ability to produce under existing climatic conditions.

In this particular study budgeting is used in an attempt to determine whether the average 80 and 120 acre farms can be made to return enough to maintain satisfactorily a family with a comparatively good standard of living.

As mentioned, more than 20 percent of the operators of sample farms had incomes from outside sources to provide more than 40 percent of their total income, and in practically all cases the incomes of these families were sufficient to provide a good standard of living for the family. No attempt was made to work farm budgets for such farms because in most cases the major portion of the operators' income was from sources other than the farm.

Procedure Used in Calculating Budgets

Standard size farms of 80 and 120 acres were used in the budget procedure because of the extra detail necessary in attempting to fit budgets to the farms of different sizes in the sample.

The fieldmen who surveyed the farms in this study attempted to group the operators of these farms into three groups on the basis of their prospective future success as farmers. Factors such as age, physical ability, indebtedness, and attitude toward their work were used in placing a subjective rating on each of the operators and the farm that he operated.

Those operators who were doing a good job of farming and who were established on their farms with a relatively small debt were placed in the first of these groups. It was felt that under normal conditions this group of farmers would continue to farm and receive a satisfactory return for their labor and other resources used in the operation of the farm.

A second group was composed of those operators who were handicapped by old age, sickness, or some other causes hindering improvement of their farming operations, but who probably will not become public problems either because they are making a living or are drawing on savings or other resources which probably will care for them. In many cases the farm unit, if passed on to some one else, might not support a family.

The third group was composed of those operators who may become public problems and who are or probably soon will be receiving aid in some form. Many of these operators were too old or were physically unfit to do other types of work.

The farms in this first group were largely part-time and general farms. All of them of 80 acres or less were part-time farms. This indicates that the operator received a sizable portion of his income from sources other than farming. Case farms to be used as guides for budgeting were selected from this first group of farms.

Standards Used in Calculating Budgets

Standards for working budgets comprise such data as crop yields, feed requirements, labor requirements, prices and expenses. As this study covered only the year 1940, it obviously would be inconsistent to use long-time average yields and prices for working budgets to compare with records of farms based on the records of one year. To make the standards more comparable with the actual results on the farms for that particular year, average yields, prices, and, in many cases, expenses used in the budgets were the average as reported by the farmers from whom the schedules were taken. Tables 13 to 16 show the data used in working the budgets.

On a number of the budgets, yields were increased above standards if the application of fertilizer on wheat and lime and fertilizer on alfalfa appeared to justify such a change. Jackson County is located in a section of Kansas that has been farmed for a long time compared with some other sections of the state; consequently, erosion, leaching, and cropping have seriously depleted the soil fertility over large areas of the county. These increases in yields in connection with the budgets were made consistent with results obtained in

Table 13. Standards used in calculating budgets, for suggested farm organizations in Jackson County, Kansas for 1940, including acre yields, material and labor requirements, prices paid and prices received.

Kind of crop	Long-time average yield[1]	Acre yield: grain	Acre yield: roughage	Acre requirements: seed	Acre requirements: twine	Acre requirements: man labor	Acre requirements: horse labor	Prices paid: threshing	Prices paid: seed	Market price received
	bushels	bushels	tons	pounds	pounds	hours	hours	cents per bushel	cents per bushel	cents per bushel
Corn, husked standing	21.7	15		7		15	37		$ 1.10	$ .60
Corn, husked standing and in rotation with alfalfa[4]		17		7		15	37			
Grain sorghum, threshed[6]	20.3	19		5	3.0	15	38	.05	1.65	
Grain sorghum, threshed in rotation with alfalfa[2]		21	5.0[4]	5	3.0	22	42	.05		
Atlas, threshed[6]		21	10.0[4]	6	3.0	22	42	.05	1.65	
Wheat, thrashed	14.8	16		90	2.5	12	26	.06	0.75	.65
Wheat threshed, fertilized[2]		26		90	2.5	12	26	.06	0.75	.65
Oats, thrashed	27.3	36		80	2.0	7	11	.05	0.40	.25
Alfalfa, no practices	2.6		1.5	15		16	24		12.00	8.00[5]
Alfalfa, limed and fertilized[2]			2.0	15		16	24		12.00	8.00[5]
Sweet clover, pastured				15		6	18		3.60	
Sudan, pastured				35		6	18		2.40	
Silo filling (sorghums)								$1.50[3]		
Wheat, combined						6	21	2.00[3]		
Liming alfalfa								2.50[3]		

[1]Average yield of crops for years 1920 to 1939 inclusive, used for comparison, only.
[2]Forty pounds of phosphate applied each year on alfalfa and wheat, cost of fertilizer 2.5 cents per pound.
[3]Estimated charges per acre.
[4]As silage.
[5]Dollar per ton.
[6]Butts put in silo.

Table 14. Standards of feed requirements for livestock used in calculating budgets for suggested farm organizations in Jackson County, Kansas for 1940.

Kind of livestock	Roughage (per head)			Grain (per head)		Protein supplements (per head)					Pasture per head
	non-legume hay	legume hay	silage	corn or sorghum	barley or oats	bran	shorts	cottonseed meal	tankage	meat scraps	
	tons	tons	tons	bushels	bushels	pounds	pounds	pounds	pounds	pounds	acres
Horses	1.0	1.00		27.0	and 31.0						2.00
Milk cows - 175 lbs. butterfat	1.0	1.50	2.0[1]	4.0	or 10.0	575		275			5.00
Milk cows - 300 lbs. butterfat		2.00	3.0	20.0	or 40.0						5.00
Dairy bull	1.5	1.50	1.5	10.0	and 10.0	300					
Dairy heifer replacement		.50	2.0	5.0	or 8.0						4.00
Dairy heifer calf		.25	.5		4.0						1.50
Sow and litter				202.5			40		200[3]		.50
Boar				25.0					25		.20
Ewe		.25		1.6	and 2.8						.75
Lamb		.10		1.4							
Ram		.50		1.6	and 2.8						.33
Wintered and fed steers		.50	2.5	40.0				250			
Wintered steers		.33	2.0								
Veal calves											
Hens (100)				110[2]						1100	
Hens (200)				230[2]						2200	
Hens (300)				475[2]						4500	

[1] Increase non-legume hay to two tons if silage isn't available.
[2] Mixed grains.
[3] Two gallons of skim milk are equal to one pound of tankage or meat scraps.

Table 15. Standards used in calculating budgets for suggested farm organizations in Jackson County, Kansas for 1940, including production, prices received, expenses paid and labor requirements for livestock.

Kind of livestock	Production: Unit	Production: quantity per head	Price received: Unit	Price received: price	Expenses paid: purchase price per head	Expenses paid: marketing cwt.	Expenses paid: cash expenses per head	Labor requirements per head: man hours	Labor requirements per head: horse hours
Milk cows (butterfat)	lbs.	175	lb.	$ .25			$ .75	120	10
Milk cows (butterfat)	lbs.	300	lb.	.25			.75	120	10
Cull cows			head	50.00		$1.50[1]			
Other dairy cattle							.25	15	5
Veal calves			head	15.00				5	
Sows	lbs.	2700	cwt.	7.55		.55	3.00	50	25
Stock pigs	lbs.	185	cwt.	7.55	$3.20	.55	.25	5	1
Ewes	lbs.	8[4]	lb.	.25[4]	6.50[7]		.35[2]	5	1
Lambs[3]	lbs.	85	lb.	.10		.80			
Ram	lbs.	10[4]	lb.	.25[4]					
Cull ewes	lbs.	140	head	5.50		.80			
Hens (100) eggs	doz.	666	doz.	.15			2.00[5]	200[5]	10[5]
(100) meat	lbs.	520	lb.	.15					
Hens (200) eggs	doz.	1500	doz.	.15			2.00[5]	200[5]	10[5]
(200) meat	lbs.	1065	lb.	.15					
Hens (300) eggs	doz.	3450	doz.	.15			2.00[5]	200[5]	10[5]
(300) meat	lbs.	1600	lb.	.15					
Chicks					.06				
Wintered and fed steers	lbs.	500	cwt.	10.93	34.10[6]	.50	.25	11	3
Wintered steers	lbs.	150	cwt.	8.13	34.10[6]	.50	.25	6	3
Work horse (labor)	hrs.	800					.50	60	10
Bull (dairy)	hrs.							25	7

[1] Per head basis.
[2] Miscellaneous cash expense and shearing.
[3] Lamb crop of 130 percent.
[4] Amount and price of wool.
[5] For each 100 hens.
[6] Good to choice calves purchased weighing 450 pounds.

Table 16. Standards used in calculating budgets for suggested farm organizations in Jackson County, Kansas, for 1940, including additional items of receipts and expenses.

Item[1]	one to 80 acres	81 to 120 acres
Family expenses	246	280
Auto expense	45	50
Other machine expense	22	60
Taxes	82	98
Interest, depreciation, insurance, repair	175	190
Receipts:		
Credit for garden	40	50
Miscellaneous	60	130

[1]Each figure is the average of the amounts reported for that item for farms surveyed in that size group.

numerous fertility tests that have been conducted in the county.

These budgets were planned on the basis of keeping as much livestock as could be fed with the purchases of feed held to a minimum and confined largely to protein supplements. However, in many cases enough feed other than supplements was purchased to complete the feed requirements for an added unit of productive livestock. In other words, rather than sell small quantities of grain enough was purchased to add an additional unit of livestock.

There are certain limitations that must be recognized when organizing a plan for the operation of small farms. The capacity for grain production is limited; therefore, animals such as hogs, which consume large quantities of grain, cannot be raised in large numbers without buying considerable quantities of grain. The possible acreage of pasture also is limited, so beef cattle cannot be pastured in large enough numbers to provide much return from that enterprise.

There are instances where large numbers of beef cattle or hogs, or both, are fed on 80 or 120 acre farms, but this provides for a speculative type of farming which is well adapted for a man with considerable capital. It cannot be recommended for the ordinary, small-farm operator who, in most cases, has limited resources with which to withstand occasional losses.

The elimination of hogs and beef cattle as major enterprises that are practical for small farms narrows the field to dairy, sheep, and poultry as being the most practical enterprises around which the farm budget can be planned on the small farms, other types of enterprises being used to balance the plan.

A few farms on which schedules were taken were selected to be used as guides for some of the budgets. For each of these farms selected, a companion budget was prepared on which an attempt was made to reorganize the original plan on this farm in a manner that would improve the efficiency of operation on that farm and result in larger return for the use of labor and capital.

The best explanation of this phase of the work comes from comparisons of the budgets and case farms. Budgets also were calculated on several suggested farms with different organization plans.

In general, the same size groups were used in the budget section as previously described and used in the study. Farms of 80 acres are in one group and those 120 acres in size are in another group. Summaries of the 80 acre farms are shown in Table 17.

COMPARISON OF BUDGETS AND CASE FARMS

Eighty-acre Group

Attention is called to the organization of the crops program and the combination of livestock enterprises for farm C and its companion budget No. 6. Farm C was typed as a dairy farm. The operator owned the farm but he had a small mortgage indebtedness on it. He was 62 years old and he and his wife lived on the farm. Their children were girls and had gone into other work. This man operated a larger farm earlier but he is content to run this small farm now because, as he says, he does not need to hire much labor and in good years he can make a fair living.

An examination of the cropping plan shows that he had a good cropping system to furnish feed for the major enterprise, dairying; he also had a small acreage of wheat to furnish part of the feed for poultry and to have some to sell. In good years the corn acreage should furnish feed for a few hogs and help with the feed for poultry and cows. These rations could be supplemented with oats. The alfalfa acreage should be increased somewhat. This has been done on the companion budget No. 6. The temporary pasture is needed to help carry the pasture load. The temporary pasture has been increased by five acres

Table 17. Records of the organization for four case farms and suggested organizations for six budget farms for Jackson County, Kansas, in 1940.

Organization	C actual	B suggested	D actual	E actual	F actual	1 suggested	2 suggested	3 suggested	4 suggested	5 suggested
Type of farm	dairy	dairy	dairy	dairy	dairy	general	dairy	dairy	sheep	sheep
Total acres in farm	80	80	87	80	80	80	80	80	80	80
Permanent pasture	17	15	20	18[1]		15	15	15	15	15
Crop acres	59	61				61	61	61	61	61
Corn	21	12	8	23		23	12	10	10	
Wheat	9		11	6[2]						18
Oats	10	12	4[3]		10	11	12	10	10	9
Alfalfa	8	12	6	9		11	12	10	10	9
Atlas or kafir	3	12	3	13	35	11	12	10	10	9
Temporary pasture	8	13	30	9	25	5	13	21	21	16
Farmstead and waste	4	4	5	2	10	4	4	4	4	4
Livestock										
Horses	3	3	3		4	3	3	3	3	2
Milk cows	6	6	12	18	14	3	6	10	3	2
Veal calves		3					3	7	1	1
Heifers (dairy replacement)	3	4	5	11	4		4	4	2	2
Bull (dairy)	1	1	2	3			1	1		
Other cattle						40[4]	20[4]			
Brood sows	2	2	7 pigs		6	3	2			
Ewes					1				50	60
Lambs					3				65	78
Rams									2	2
Hens	100	100	150		170	200	100	200	200	100

[1] Cut for hay.
[2] Other legumes.
[3] Soybeans.
[4] Wintered steers.

on budget No. 6. The farmstead and waste are average for 80 acres in Jackson County and not excessive.

Other changes in acreage of crops on budget No. 6 included elimination of wheat. This was thought advisable because raising a small acreage of wheat is expensive when the expense is distributed on a per acre or per bushel basis. Chinch bugs are a menace in this area many years, and small areas of wheat may produce enough of these pests to destroy sizable areas of other crops. For these reasons, it was felt buying wheat needed for feed would be more economical. As a cash crop, this small acreage of wheat would not be profitable.

Most of the permanent pastures on small farms in Jackson County have been injured by over-grazing. Many of them have areas that can be broken out and used for grain crops or temporary pasture. This plan was followed on budget No. 6 with two acres of permanent pasture, but the temporary pasture was increased more than twice this acreage. The corn acreage was reduced but the atlas or kafir acreage was increased to give somewhat more assurance of getting some grain and also to provide a good source of rough feed to be used either as silage or stover. For this purpose atlas was preferred.

Budget plan No. 6 provides for 13 acres of temporary pasture on which a rotation of crops using sweet clover, small grain crops, lespedeza and sudan would be used. This plan would increase the carrying capacity of this acreage at a ratio of at least one acre temporary pasture to three acres permanent pasture on small farms in the area. In computing pasture requirements for livestock on the budgets, the temporary pasture acreage was figured at this ratio.

The livestock plan on farm C consisted of a major dairy enterprise with six producing cows and minor hog and poultry enterprises. In this budget work a herd of six or more producing dairy cows was considered a major dairy enterprise and replacement heifers were kept and a dairy bull provided. This is a small number of cows to use as a dairy breeding herd since cost per head for

maintaining a bull would be high; on the other hand, six cows is a good sized enterprise on a small farm if most of the feed for the cows is to be raised on the farm. On budgets where a minor enterprise of five cows or less was provided a breeding fee was charged rather than making provision for keeping a bull. Calf crops for dairy herds were figured at 90 percent, all calves other than replacement heifers being sold as veal.

A breeding fee was charged when three sows or less were kept on the budgets but for four or more sows a boar was provided.

Chickens were provided on the budget farms in flocks of 100-, 200-, or 300-hen flocks; the 300-hen flock was considered a major poultry enterprise. These sizes of flocks are not in accord with the recommendations of the Poultry Department of Kansas State College, but they were more in line with what farmers customarily handle and were also in keeping with numbers of hens for which equipment was available. It was thought that the Poultry Department's recommendations are sound but exceptions appeared justified for the reasons given. Tables 14 and 15 show the requirements and production for these flocks.

Table 18 includes the summaries for farms on which actual records were obtained and those for which suggested organizations were planned. A comparison of receipts for farm C with budget No. 6 shows that they are somewhat higher for dairy, much higher for hogs, and approximately the same for poultry. The increase in receipts for dairy and hog enterprises was realized by assuming better management than that on the original farm. The receipts from hogs were from two brood sows farrowing two litters each during the year, so a good manager should be able to realize more than $72 from such an enterprise. The increase from dairying resulted from better rations for the cows. For 1940 the grain and feed crops' yields of farm C were low except for oats because of weather and chinch bug damage, but the same average yields as reported for farm C were used on budget No. 6. The operator of the farm chose to produce

Table 18. Receipts, expenses, and net earnings for four case farms and six suggested budget farms of 80 acres in size for Jackson County, Kansas, for 1940.

	C	6	D	E	F	1	2	3	4	5
Gross family earnings										
Crops										
Wheat			$114.34	$524.00[5]						$137.15
Corn			86.80[1]		$ 54.05[1]					
Oats			498.52[2]		197.67[2]					
Livestock										
Sheep					27.14				$745.50	892.50
Dairy	$439.60	$587.50	1445.16	3714.22	1355.91	$158.75	$587.50	$937.50	193.75	150.00
Hogs	72.00	407.70	251.04		593.83	611.55	407.70			
Beef						1951.20	975.60			
Poultry	177.40	177.90	231.83		165.94	384.75	177.90	384.75	384.75	177.90
Credit for garden and fuel	55.00	55.00	426.72[3]		204.44[3]	40.00	40.00	40.00	40.00	40.00
Total	744.00	1228.10	3054.41	4238.22	2598.98	3146.25	2188.70	1362.25	1364.00	1397.55
Farm expenses										
Feed purchased	39.00	199.80	972.81	342.70	840.35	113.39	179.60	247.35	202.78	137.55
Livestock purchased		13.50				1391.40	695.70	27.00	137.50	143.50
Crop expense		84.00	65.00			84.45	95.63	88.15	73.30	121.50
Livestock expense	7.70	52.45		included		196.30	115.70	18.00	93.57	152.52
Machinery expense	40.00	40.00	451.22	371.66[6]	361.85	22.00	22.00	22.00	22.00	22.00
Interest on livestock purchased						69.57	34.78	1.35	6.88	7.18
Taxes	75.00	75.00	86.30	51.24	49.36	82.00	82.00	82.00	82.00	82.00
Hired labor	7.50	7.50	143.95	1445.30	9.25			47.80		
Interest paid, insurance and depreciation	208.00	208.00	405.32	709.91	638.04	175.00	175.00	175.00	175.00	175.00
Auto repair	5.00	5.00	198.58[4]	included	165.20	45.00	45.00	45.00	45.00	45.00
Total	382.20	685.25	2323.18	3120.81	2064.05	2179.11	1445.41	753.65	838.03	886.25
Net family earnings	361.80	542.85	731.22	1117.41	534.93	967.14	743.29	608.60	525.97	511.30
Family expense	164.00	164.00	246.00	246.00	246.00	246.00	246.00	246.00	246.00	246.00
Remainder	197.80	378.85	485.22	871.41	288.93	721.14	497.29	362.60	279.97	265.30
Possible miscellaneous receipts			included	30.00	36.00	60.00	60.00	60.00	60.00	60.00
Amount left for miscellaneous expenses, savings, etc.	197.80	378.85	485.22	901.41	324.93	781.14	557.29	422.60	339.97	325.30

[1] Miscellaneous crops. [2] Custom work. [3] All home-used products. [4] Auto and truck. [5] All grain. [6] Includes crop expense.

what livestock products he could with the feed available. An inspection of the item of expense for feed purchased shows that on budget No. 6 much more feed was purchased; other items of expense such as livestock, crop, and machinery expenses and livestock purchases also were higher.

Expenses such as taxes, hired labor, interest paid, insurance, depreciation, repair on buildings, and auto expenses were charged as reported on actual farms and their companion budgets, but on the suggested budgets the average amounts reported for farms of that size group were charged for these items of expense.

When total earnings for the farm were computed and the total farm expenses subtracted, net farm earnings remained. In arriving at this figure, one should not forget that the total farm expense item did not include any value of operator's labor nor unpaid family labor; neither did it include interest on investment, but it did include interest reported as paid. Likewise the gross farm earnings did not include credit for rental value of the farmstead, but it did include an estimated value of home-used products.

One of the major objectives in this study was to ascertain just how much money the farm family on these small farms could have left to meet miscellaneous expenses, amortization payments on their land, and for insurance or other savings. To obtain this figure it was necessary to carry the summaries further and subtract from the net family earnings an amount for family expenses. This included money spent for items such as groceries, meats, household furnishings, fuel oil, medical care, education, and recreation. These expenses were estimated by the operators of the farms and their estimates were used on the summaries for actual farms and their companion budgets, but an average of these estimates was used for the suggested budgets. This sum was subtracted from the net family earnings. The final step in this analysis was to add to this remainder a sum designated as possible miscellaneous receipts. This item included, primarily,

payments for participation in various government programs for agriculture. Other items of income of a miscellaneous nature also were included, such as labor off the farm; however, machine custom work was not included. These receipts were not included in "gross farm receipts" because not all farms participated in the farm programs and while the operators had a potential income from this source, many of them did not participate. On actual farm schedules and on companion budgets this item was added if the farm reported an income from this source, but if the actual farm was not participating and no other miscellaneous receipts were reported nothing was added for this item. On the suggested budgets a figure representing the average reported for the different size farm groups was added as possible miscellaneous receipts. After this item was added, the resulting figure was the amount of money available for this farm family to use for miscellaneous expenses, amortization payment, and savings.

Farm C had $197.80 left after family expenses were subtracted from receipts, compared with a corresponding amount of $378.85 on budget No. 6. As was stated earlier, increased efficiency was responsible for this increase in receipts.

This detailed explanation of the procedure used in preparation of these budgets appeared advisable since the same general principles were used in the preparation of all of the budgets. The remainder of this discussion deals with comparisons of budgets and not with the technique of working the budgets.

Among the dairy farm record books for the year 1940 analyzed by the Department of Agricultural Economics of the Kansas Agricultural Experiment Station there were three of comparable size with the 80 acre farms in this study. One of the books was for a farm of 87 acres but this was considered comparable. Summaries of these books are given on Table 18, columns D, E, and F. These records were recorded here to furnish actual records of farms with which to compare the dairy farms and budgets in this study. Data given for these farms were taken as recorded in the record books except for the item of family expense,

for which the average of these expenses as reported for the one to 80 acre farm group surveyed were taken.

Examination of the organizations on these farms as given in Table 17, shows quite large dairy herds, the largest of which had 18 cows and the smallest 12 cows. These were considerably larger herds than those on farm C and budget No. 6. The sizable feed purchase items on these record book farms indicate how such large numbers of cows were kept on such small farms.

The variation in income for the record book farms might have been the result of a number of causes, but probably was due to the variation in returns per cow in the herds. Farm E has more than $200 in receipts per cow and the other two farms have slightly more than $115 in receipts per cow. The high income farm was also able to keep more cows with lower feed costs. The results shown from these farms with actual records would indicate that, with reasonably good management, the plan on budget farm No. 6 could be expected to yield the returns shown.

It seems that dairying fits the small farm, especially the 80 acres, just a little better than most enterprises; consequently, a large proportion of the suggested budgets have dairying as a major enterprise. Attention is called to budget No. 2 with a major enterprise in dairying and with minor enterprises in hogs and beef cattle. Two brood sows producing two litters each per year make up the hog enterprise, and 20 steers wintered and sold in the spring make up the beef enterprise. Many times feed is wasted either by feeding it as stover or by hauling sizable amounts of it to ditches in the spring. This budget provides for converting the atlas butts into silage and feeding large amounts with alfalfa to the wintering steers. This furnishes a market for the extra rough feed, makes a large quantity of manure for fertilizer, and takes advantage of a seasonal rise in beef prices from fall to late spring.

The cropping system calls for equal acreages of corn, oats, alfalfa, and

atlas, together with temporary pasture acreage to supplement the permanent pasture. The beef steers are marketed at the time the grazing season starts and would sell as stock cattle to go on grass.

According to the labor requirement standards as shown in Tables 13 and 15, one man could handle this combination of enterprises on the farm, although at peak loads such as during haying and silo filling he would need extra labor. The survey of these farms indicates that much of the extra labor needed at these times was obtained by exchanging with neighbors. The age of the operator on the farm would vary the labor available to some extent. This combination of enterprises could best be managed by an operator younger than the average age on these small farms.

The feed purchase item was small on this farm and the amount spent was primarily for protein supplement feeds for the 100-hen poultry flock, the dairy cows, and the hogs, with very little spent for the hogs because of the amount of skim milk available.

The financial return from this farm was larger than for the average from the other types of farms in this study, with the exception of part-time farms. However, this type of enterprise is rather speculative in nature.

The beef cattle enterprise, if properly managed, may furnish a market for surplus rough feed even though it is a speculative enterprise.

Budget No. 2 should be compared with budget No. 3. Instead of beef cattle as a minor enterprise budget No. 3 had a major in dairying with ten cows and an enlarged poultry flock. This combination of enterprises, if used at all, should be used on a farm located so that whole milk can be marketed because of the limited outlet for skim milk through the poultry enterprise. No sows have been provided on this farm. The purchase of stock pigs would correct this defect in the plan but that would necessitate the purchase of rather large quantities of grain.

In comparison with budget No. 2 the cropping system of No. 3 provided for two acres less each of grain and hay crops. These extra acreages were added to the temporary pasture acreage to take care of the extra cows kept.

Some extra labor was required on this farm and in addition to labor hired during peak loads some family labor would be needed to help with the milking. Although it is possible for one man to care for and milk ten cows, chore labor requirements are high. The financial return was less than for the farm with the program of wintering beef cattle but the financial risks were not so great.

Budgets No. 4 and 5 bring the sheep enterprise into the plans as a major enterprise. The general plan for the sheep enterprise was to buy open yearling western ewes and produce lambs for the early summer market. A lamb crop of 130 percent was figured as being reasonable, the lambs to be sold in June, or before, at 85 pounds in weight. A three percent death loss was estimated for the ewes and the flock was to be replaced at the rate of one-third of the original number each year. The cull ewes would be sold as fat ewes. Each ewe would produce eight pounds of wool and the ram would produce ten pounds. If sheep and wheat were combined in the farm plan, the ration for the ewes would be cut in half because of the wheat pasture available.

These budgets indicate that the sheep enterprise did not offer quite as much income as did the dairy and poultry enterprises although the sheep enterprise did have certain advantages in that it did not require as much labor as did the others; consequently, sheep were well adapted to the farm where the operator was not able to take care of a large dairy or poultry enterprise.

The main differences between budgets No. 4 and 5 are that No. 4 provided for one more dairy cow, 100 more hens, and ten fewer ewes than does No. 5. Cropping system No. 4 did not have wheat but No. 5 had 18 acres.

The financial summary indicates that the 100 extra hens and one additional

dairy cow on budget No. 4 would yield more net return than would the ten additional ewes and the 18 acres of wheat on budget No. 5. The difference in return on these two budgets was so small that it did not warrant drawing definite conclusions.

Even though the budgets indicate that enterprises other than sheep would yield more than would the major sheep enterprises, there is a likelihood that there are more hidden costs in the dairy and poultry enterprises than in the sheep enterprise. The standards used may be high on feed requirements for sheep, which showed them at a slight disadvantage compared with some other enterprises. Feed purchased in No. 4 was somewhat higher than in No. 5 because of the 100 additional hens kept on that farm.

One-Hundred-Twenty Acre Group

Tables 19 and 20 give summary information for actual and budget farms for the 120 acre farms. Apparently the addition of another 40 acres adds considerably to the operator's chances of a satisfactory income although the income on some of the actual 120 acre farms was as low as or lower than the average returns for the 80 acre farms.

The first farms to be compared in this group were G and No. 6. The actual farm G was a crops farm, with portions of the corn and wheat sold as seed for more than market price. This practice was also provided in the companion budget No. 6.

The main differences in these two farms were a decrease of five acres in total farm size on No. 6 as compared with the actual farm G. This difference shows up in four more acres in crop land on G and one more acre in farmstead and waste on the same farm. No temporary pasture was provided on farm No. 6, and corn acreage was reduced. There were small additions made to the wheat

Table 19. Records of the organizations on four case farms, and seven suggested organizations for farms in Jackson County, Kansas for 1940.

	G actual	6 suggested	H actual	7 suggested	I actual	1 suggested	2 suggested	3 suggested	4 suggested	5 suggested	J actual
Organization											
Type of farm	crops	hog	general	general	hog	beef	general	hog	sheep	dairy	
Total acres in farm	125	120	120	120	120	120	120	120	120	120	110
Permanent pasture	25	25	45	35		26	26	26	26	26	20
Crop acres	79	75	72	82		84	84	84	84	84	
Corn	51	45	23	28	25	32	16	32	14	32	23
Wheat	13	15	16	16	65[6]		30		28	16	16
Oats				13	8[7]	16	14	16	14	16	14
Alfalfa	9	15	15	15		16	12	16	12	12	12
Atlas or kafir			8			16		16			4
Temporary pasture	6		10	10	12	4	12	4	16	8	6
Farmstead & waste	21	20	3	3	10	10	10	10	10	10	10
Livestock											
Horses	4	4	4	4	2	4	4	4	4	4	3
Milk cows	3	3	7	6		5	3	5	2	6	4
Veal calves											
Heifers (dairy replacement)			3	4		2		2		4	1
Bull (dairy)								1			
Other cattle					24[4]	45[3]		50[4]			
Brood sows	4[2]	4	3	1	105[5]	25[2]		5		2	3
Ewes			26	25			50		75		
Lambs			27	32			65		97		
Rams				1			2		2		
Hens	150	200	275	300		100	300	200	100	200	200

[2]Other hogs.
[3]Thirty wintered and fed steers, 15 wintered steers.
[4]Beef steers.
[5]Stock hogs.
[6]Brome grass.
[7]Timber.

Table 20. Receipts, expenses, and net earnings for four case farms and seven suggested organizations on farms of 120 acres in size, for Jackson County, Kansas in 1940.

	G	6	H	7	I	1	2	3	4	5	J
Gross family earnings											
Crops											
Wheat	$300.	$230.70	$102.00	$53.30			$346.45		$231.40	$98.80	$70.78
Corn	930.	222.80			$23.50[5]						100.00[3]
Oats						$36.50		$26.50			
Alfalfa		52.00	15.00[1]								
Livestock											
Sheep			329.00	368.50			741.50		1111.50		
Dairy	339.	156.25	490.00	587.50	29.03[6]	306.25	156.25	306.25	112.50	587.50	97.45
Hogs	30.	815.40	198.00	203.85	4575.84	330.31		1019.25		407.70	183.75
Beef					2565.82	3846.75		2439.00			119.85
Poultry	200.	384.75	309.20	757.50		177.90	757.50	384.75	177.90	384.75	64.04
Credit for garden and fuel	20.	20.00	95.00	95.00		42.00	50.00	50.00	50.00	50.00	283.50[4]
Total	1819.	1881.90	1538.20	2065.65	7194.21	4739.71	2051.70	4225.75	1683.30	1528.75	919.37
Farm expenses											
Feed purchased	95.	111.93	337.50	376.80	3876.19	659.95	126.08	323.65	72.65	167.40	6.00
Livestock purchased		27.00		100.00		1648.45	151.00	1732.50	176.00	27.00	
Crop expense		39.70	25.50	86.36		137.50	142.00	137.50	89.40	87.26	
Livestock expense	15.	79.65	39.00	75.60		227.31	92.87	259.50	126.56	54.20	45.00
Machinery expense	135.	135.00	75.50	75.50	529.57	140.00	60.00	60.00	60.00	60.00	22.75
Interest on livestock purchased		1.35		5.00		82.42	7.55	86.62	8.80	1.35	
Taxes	145.	145.00	98.00	98.00			98.00	98.00	98.00	98.00	73.07
Hired labor	100.	100.00	28.00	108.80	646.89	130.00		208.00		42.20	
Interest paid, insurance depreciation, repairs	223.	223.00	579.25	579.25	322.62	302.00[2]	190.00	190.00	190.00	190.00	180.53
Auto expense	140.	140.00	52.00	52.00	273.90	56.00	47.00	47.00	47.00	47.00	176.64
Total	853.	1002.63	1234.75	1557.31	5649.17	3383.63	914.50	3142.77	868.41	774.41	503.99
Net family earnings	966.	879.27	303.45	508.34	1545.04	1356.08	1137.20	1082.98	814.89	754.34	415.38
Family expense	575.	575.00	308.00	308.00		268.00	280.00	280.00	280.00	280.00	280.00
Remainder	391.	304.27	-4.55	200.34	1545.04	1088.08	857.20	802.98	534.89	474.34	135.38
Possible miscellaneous receipts			196.00	196.00	93.89	130.00	130.00	130.00	130.00	130.00	
Amount left for miscellaneous expenses, savings, etc.	391.	304.27	191.45	396.34	1638.93	1218.08	987.20	932.98	664.89	604.34	135.38

[1] Horses. [2] Includes taxes. [3] Custom work. [4] All home-used products. [5] Increase in inventory. [6] Horse.

and alfalfa acreages.

The principal change from the actual farm compared with No. 6 was the addition of four brood sows and the marketing of a large portion of the corn through hogs rather than selling it as grain on the market. The poultry enterprise also was increased b 50 hens.

Total earnings for farm No. 6 were slightly higher than for farm G, but the expenses for farm No. 6 were considerably higher than for farm G. Consequently, the "net family earnings" were larger for the actual farm. Family expenses for this farm were approximately $300 higher than for the average family on the 120 acre farms. If this extra $300 were added to the amount left for miscellaneous expenses and saving on farms G and No. 6, these items would be sizable sums. Another factor that limited the income from these farms was the high percentage of waste and timber land from which little if any income was realized. However, this condition exists in many areas of northeast Kansas and, therefore, cannot be avoided.

Actual farm H was a general farm which was typical of the majority of the 120 acre farms among the sample farms surveyed. As this extra 40 acres of land was added to the unit in going from the 80 to the 120 acre size farms, there apparently was a shift from specialization in an enterprise to a diversity of enterprises of more nearly equal proportions in size.

Comparison of farm H with the companion budget No. 7 shows a rather dangerous change, if judged by the standard of public opinion. It was the plowing up of permanent pasture acreage to be used for crop production, but the writer's experience in eastern Kansas leads him to believe that in many cases this is justified where pastures are so poor that it would require reseeding and the loss of the use of the land for at least one season. A good rotation of temporary pasture on farm No. 7 would provide for the livestock kept together with the aid of wheat pasture for the sheep. Other crop changes were the

reduction of corn acreage and the addition of a sizable acreage of oats on the budget farm No. 7 as compared with farm H. Oats would add to the reliability of the feed supply on the farm because they are a sure crop in that part of Kansas and the yields are relatively high compared with other crops in the region.

The livestock program is similar on these two farms, but a reduction of one milk cow and two brood sows was necesaary on farm No. 7 so that feed purchases might be held to a minimum. The poultry flock was increased 25 hens on farm No. 7 as compared with H. Under this plan farm No. 7 has a major enterprise in poultry and dairy and minor enterprises of sheep and hogs.

The comparison of financial returns to these farms shows that the net family earnings to farm No. 7 was about $200 larger than to the actual farm. This increase was due primarily to increased efficiency in production, especially in the poultry and dairy enterprises. These increased efficiencies should not be so difficult to realize with good management because dairy herd improvement records indicate that many dairy herds have average production records of more than 300 pounds of butterfat per cow, and records kept on poultry flocks in the state indicate that 130 eggs per hen is lower on the average than for hens in flocks of those producers keeping records. The standards of production used in this study assume approximately these standards of production for these major livestock enterprises.

Expense items on the actual budgets may seem inconsistent in the matter of livestock purchased but with the exception of livestock such as beef steers or stock pigs the purchase price was subtracted before the net receipt figure was obtained. This is not true of the suggested plans for farms, so items of livestock purchased show as an expense on suggested budget farms.

The expense item of "interest paid, insurance, depreciation, and repair" for farm H was unumually high as compared with the average for farms of this

size, and no doubt was a little high for normal because this operator had spent quite a sum of money for repairs on his residence and he claimed rather high depreciation on some of his buildings. Budget No. 7 would indicate that the operator would have to spend more for hired labor than has been indicated on farm H, and this additional labor cost was included on budget No. 7. The family might supply this additional labor.

The income left for miscellaneous expenses and savings on these farms did not compare favorably with many of the farms in this group, especially the actual farm. One must keep in mind that, if the expenses had been more in line with average expenses for farms of this group, the items of income would reflect a more favorable return for these farms.

Actual farm I and suggested budget No. 1 are not companion plans but are similar, and No. 1 was patterned after I, but it is more conservative in nature in that not so many livestock were purchased and fed and feed was not purchased in such large quantities. These farms were highly speculative, they involved the purchase and feeding for market of large numbers of beef cattle and stock pigs. This type of farm is well suited to operators who are financially able to take more risks, but is not well suited for the average small-farm operator.

Suggested budget farms No. 2 and No. 4 are well suited to the needs of a farm limited in labor supply because the organization of both of these farms stress sheep and poultry with a sizable acreage of wheat on each farm, the main difference being the variation in emphasis on the livestock enterprises. Fifty ewes and 300 hens were kept on farm No. 2 and 100 hens and 75 ewes were kept on farm No. 4. The acreage of crops was not drastically different on the two farms.

Apparently the emphasis on poultry and its expansion into a major enterprise of 300 layers offered a chance for a more satisfactory income than did the expansion of the sheep enterprise with a corresponding contraction of the poultry enterprise. Either of these plans offers a chance for fair returns financially.

Suggested budget No. 3 is an attempt to emphasize the production of hogs on a small farm. The crops program stressed corn, 32 acres were planted. In addition the grain was harvested from 16 acres of atlas, and the butts were put into the silo for feed that was fed to 50 steers, wintered on stover silage and alfalfa. The other crops raised were 16 acres each of alfalfa and oats.

Ten litters of pigs were farrowed each year from five brood sows. Five dairy cows and 200 hens were kept as minor enterprises, and 50 steer calves were wintered to eat the rough feed produced. This enterprise is not so speculative but the operator would need enough credit to purchase the beef cattle. If this were not possible, he might get cattle to winter for some one else. This budget offers a chance for high financial return to the man who is able to spend a lot of time doing chores in the winter. A considerable amount of feed would have to be purchased on this farm.

Suggested budget No. 5 was strictly a dairy farm with minor enterprises in hogs and poultry. This plan provided for 16 acres of wheat but did not raise any sorghum crop. Little feed was purchased but even with this expense item held to a minimum this farm plan offers only a fair return to the operator. This plan is similar to that followed by many small farm operators.

Record J was an actual farm record taken from the Farm Bureau-Farm Management records. The farm lacked size in any one particular enterprise and was typical of many farms on which no special emphasis was placed on any particular part of the farm business. Extremely low receipts from the poultry and dairy enterprises accounted for the low income from this farm.

SUMMARY AND CONCLUSIONS

This study grew out of an interest in the probable income to farmers operating different sized farms in an area where conditions of soil and climate were as near uniform as it is possible to find. It was made to determine just how well families are able to obtain a fair standard of living from small acreages.

Many studies have been made which indicate that, while some farms may be too large and others may be too small, there are optimum sizes of farms depending upon variable factors within a given community. Studies of agricultural census data showed that for the United States as a whole the number of small farms was increasing. They also showed that 40 percent of the farmers operated six percent of the land. Based on income they indicated that 28 percent of the farmers produced 5.6 percent of the total agricultural output.

Data for this small farm study were obtained by means of a survey of sample farms drawn at random in an area 12 miles square around Holton in Jackson County, Kansas. Twenty percent of the farms in this area were drawn as a sample. Forty-six of the 174 farms drawn in the sample were 120 acres or less in size. These 46 small farms were used in this study.

These data were analyzed on the basis of farm type and tenure. Income figures were given as farm-family earnings which included net-cash income plus the value of home-used products. In arriving at the net income figure, all cash expenses were subtracted from gross income; interest actually paid was charged as a cash expense (but interest was not charged on investment); and no charge was made for non-cash labor supplied by the family.

There was some correlation between the average age of farm operators and the income received from small farms. Small farm operators were older than the average farm operators in the same area. This indicated that in a majority

of cases these small farms were operated by families who were tapering off in their farming operations by operating small acreages. The range in age of operators in this sample was from 22 to 83 years. The average age was 53.4 years.

Sample farms were classified as part-time, general, crops, dairy, poultry, hog, fruit specialty and subsistence. The enterprise which contributed 40 percent or more of the gross income determined the type. The part-time farm was one on which the operator received 40 percent or more of his gross income from sources other than farming. The subsistence farm was one on which 50 percent or more of the gross income was received as farm-furnished products used in the home.

Approximately 20 percent of all sample farms and 25 percent of the farms of 80 acres and less were part-time farms. The income to the operators of these farms was satisfactory and a good standard of living could be maintained. With the exception of the one fruit specialty farm, the remaining farms of 80 acres or less did not return a satisfactory income.

A study of family income requirements taken from a summary of Kansas home-account books was used as a standard for judging these small farm incomes. This study showed that in 1940, an average of $892 was needed for family expenditures. However this figure varied with changes in size and type of families, and it is probable that a small family composed of older people would not need that large a sum.

On the group of farms of 80 acres or less in size, the lowest incomes were from the dairy, crops and poultry farms. The average age of the operators on these three types of farms was approximately 56 years.

In general, farms of between 81 and 120 acres returned more than the farms of 80 acres and less but average incomes from these farms was not satisfactory. A majority of these larger farms were of a general type, which indicates that

as the farm increased in size, the operators tended toward more diversification and carried more enterprises of near equal importance. This was also true of owners as compared with tenants.

Budgets were calculated for farms of 80 and 120 acres using several different combinations of enterprises. The number of different enterprises adapted to small farms is limited. These farms do not have enough pasture acreage to accommodate a beef herd of sufficient size. They also are limited in crop acres so that large acreages of wheat or corn are not possible if a good crop rotation is used. This limits the number of hogs that can be supported because of the large quantity of corn required to finish them for market.

These budgets and actual farm records indicated that the small farm yielded a good return when large numbers of beef cattle and hogs were fed. This plan required the purchase of large quantities of grain and required high investment in livestock. The operation of this kind of farm would require a younger operator than the average on small farms. It also would require adequate financing and better-than-average management.

The most practical organizations for small farms included either poultry, sheep, or dairy as the major enterprise. Hogs, poultry, sheep, and dairy may be used as minor enterprises depending upon the major enterprise chosen. Dairying combined well with poultry and hogs. Dairying, sheep, and poultry gave good results if whole milk was sold so that there would not be a waste of skim milk. When sheep were used as a major enterprise it was found that a sizable acreage of wheat worked well in the cropping system because it could be used to advantage for sheep pasture. This combination of enterprises was well adapted to the farms with older operators because of the comparatively small amount of labor required.

The budgets indicated that a dairy herd of sufficient size to carry on an efficient breeding and herd-improvement program, taxed the productive capacity

of the average 80 acre farm. In many cases, sizable quantities of feed would have to be purchased.

Based on results of the budget study, the small farm was capable of producing a larger income than the average reported by operators of the farms surveyed. This probably was due to the assumption of better management on the budget farms, which resulted in more efficient production of livestock.

The retention of the small farm represents a conflict between the social well-being of the farm family, on one hand, and the highest financial return per acre on the other. The continued use of a certain part of the farm land in each community as small farms might serve society better than the use of this land in larger and more efficient units. However, in many instances public assistance might be needed to supplement the incomes of these low-income farmers.

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